

Claims

1. A method of producing a valved sheath, comprising:
 - (a) providing a sheath comprising a proximal hub portion, an elongated body portion extending distally from the proximal hub portion, and a passageway extending through the proximal hub and elongated body portions;
 - (b) injecting a foam material into at least some of the passageway; and
 - (c) forming in the foam material one or more self-sealing slits, the foam material and the one or more slits serving as a valve in the passageway of the sheath.
2. The method of claim 1 wherein step (b) comprises injecting the foam material such that the length of the foam material within the passageway is greater than the width of the foam material at any point within the passageway.
3. The method of claim 1 wherein step (c) comprises forming the one or more self-sealing slits such that none of the one or more self-sealing slits extends in width to an inner surface of the sheath that defines the passageway.
4. The method of claim 1 wherein step (c) comprises forming the one or more self-sealing slits such that the one or more self-sealing slits substantially prevent the flow of gas into the passageway of the sheath.
5. The method of claim 1 further comprising providing a pair of lines extending at least some of the length, and on opposite sides, of the sheath, the sheath being separable along the lines.
6. The method of claim 1 further comprising scoring the sheath along at least some of its length.

7. The method of claim 6 wherein the scoring comprises scoring a pair of lines that extend at least some of the length, and on opposite sides, of the sheath, the sheath being separable along the lines.

8. The method of claim 1 wherein step (a) comprises providing the sheath comprising the proximal hub portion which comprises a pair of wings extending substantially perpendicular to the elongated body portion of the sheath.

9. The method of claim 1 wherein step (b) comprises injecting the foam material which comprises a closed cell foam.

10. The method of claim 1 wherein step (b) comprises injecting the foam material such that the foam material becomes affixed to a portion of an inner surface of the sheath that defines the passageway.

11. Apparatus for facilitating the insertion of a flexible medical device into a body, comprising:

- (a) a sheath comprising
- a proximal hub portion,
 - an elongated body portion extending distally from the proximal hub portion, at least some of the elongated body portion capable of being placed into the body, and
 - a passageway extending through the proximal hub and elongated body portions, the passageway being defined by an inner surface of the sheath; and
- (b) a valve comprising

a foam material filling at least some of the length of the passageway, the length of the foam material within the passageway being greater than the width of the foam material at any point within the passageway, and

one or more self-sealing slits in the foam material, none of the slits extending in width to the inner surface of the sheath, the one or more slits capable of allowing the flexible medical device to pass therethrough and sealing around the device.

12. The apparatus of claim 11 wherein the foam material includes a proximal section and a distal section, the one or more slits in the distal section remaining sealed as the flexible medical device is introduced first into the one or more slits in the proximal section.

13. The apparatus of claim 11 wherein the sheath further comprises a pair of lines extending at least some of the length, and on opposite sides, of the sheath, at least the sheath being separable along the lines.

14. The apparatus of claim 13 wherein the lines comprise scorings.

15. The apparatus of claim 13 wherein the valve is separable with the sheath.

16. The apparatus of claim 15 wherein the valve that is separable is splittable into two halves along one of the self-sealing slits.

17. The apparatus of claim 11 wherein the elongated body portion comprises at least a first section and a second section, a first cross-sectional area of the first section being greater than a second cross-sectional area of the second section.

18. The apparatus of claim 17 further comprising a shoulder disposed within the passageway and between the first and second sections.

19. The apparatus of claim 12 wherein the foam material defines a depression in the proximal section.

20. The apparatus of claim 19 wherein the foam material defines the depression which comprises a conical shape for receiving the flexible medical device.

5 21. The apparatus of claim 11 wherein the proximal hub portion comprises a pair of wings extending substantially perpendicular to the elongated body portion of the sheath.

22. The apparatus of claim 11 wherein the foam material comprises a closed cell foam.

23. The apparatus of claim 11 wherein the foam material is affixed to a portion of an inner surface of the sheath that defines the passageway.

Sub 12
24. Apparatus for facilitating the insertion of a flexible medical device into a body, comprising:

(a) a sheath comprising

a proximal hub portion,

an elongated body portion extending distally from the proximal hub portion, at least some of the elongated body portion capable of being placed into the body, and

a passageway extending through the proximal hub and elongated body portions, the passageway being defined by an inner surface of the sheath; and

(b) a valve comprising

a foam material filling at least some of the length of the passageway, the length of the foam material within the passageway being greater than the width of the foam material at any point within the passageway, the foam material being affixed to a portion of the inner surface of the sheath, and

one or more self-sealing slits in the foam material, the one or more slits capable of allowing the flexible medical device to pass therethrough and sealing around the device.

25. The apparatus of claim 24 wherein the foam material includes a proximal section and a distal section, the one or more slits in the distal section remaining sealed as the flexible medical device is introduced first into the one or more slits in the proximal section.

26. The apparatus of claim 24, wherein the sheath further comprises a pair of lines extending at least some of the length, and on opposite sides, of the sheath, at least the sheath being separable along the lines.

27. The apparatus of claim 26 wherein the lines comprise scorings.

28. The apparatus of claim 26 wherein the valve is separable with the sheath.

29. The apparatus of claim 28 wherein the valve that is separable is splittable into two halves along one of the self-sealing slits with each of the halves of the valve remaining affixed to the respective halves of the sheath.

30. The apparatus of claim 24 wherein none of the one or more self-sealing slits in the foam material extend in width to the inner surface of the sheath.

31. The apparatus of claim 25 wherein the foam material defines a depression in the proximal section.

32. The apparatus of claim 31 wherein the foam material defines the depression which comprises a conical shape for receiving the flexible medical device.

33. The apparatus of claim 24 wherein the proximal hub portion comprises a pair of wings extending substantially perpendicular to the elongated body portion of the sheath.

34. The apparatus of claim 24 wherein the foam material comprises a closed cell foam.

Sub 37 35. Apparatus for facilitating the insertion of a flexible medical device into a body, comprising:

(a) a sheath comprising

a proximal hub portion,

an elongated body portion extending distally from the proximal hub portion, and

a passageway extending through the proximal hub and elongated body portions; and

(b) a valve comprising

an injected foam material filling at least some of the length of the passageway, the length of the foam material within the passageway being greater than the width of the foam material at any point within the passageway, and

one or more self-sealing slits in the foam material, the foam material and the one or more slits serving as a valve in the passageway of the sheath.

36. The apparatus of claim 35 wherein the foam material includes a proximal section and a distal section, the one or more slits in the distal section remaining sealed as the flexible medical device is introduced first into the one or more slits in the proximal section.

37. The apparatus of claim 35 wherein none of the one or more self-sealing slits extends in width to an inner surface of the sheath that defines the passageway.

38. The apparatus of claim 35 wherein the one or more self-sealing slits substantially prevent the flow of gas into the passageway of the sheath.

39. The apparatus of claim 35 wherein the sheath further comprises a pair of lines extending at least some of the length, and on opposite sides, of the sheath, at least the sheath being separable along the lines.

40. The apparatus of claim 39 wherein the lines comprise scorings.

5 41. The apparatus of claim 39 wherein the valve is separable with the sheath.

42. The apparatus of claim 36 wherein the foam material defines a depression in the proximal section.

43. The apparatus of claim 42 wherein the foam material defines the depression which comprises a conical shape for receiving the flexible medical device.

44. The apparatus of claim 35 wherein the proximal hub portion comprises a pair of wings extending substantially perpendicular to the elongated body portion of the sheath.

45. The apparatus of claim 35 wherein the foam material comprises a closed cell foam.